

Application No. 10/790,849
Amendment dated March 27, 2006
Reply to Office Action of October 27, 2005

Docket No.: K2020.0003/P003

REMARKS

The application has been reviewed in light of the Office Action mailed on October 27, 2005. Claims 1, 2, 8, 11, 15, 17, 18, 27 and 28 have been amended and new claims 29 and 30 have been added. No new matter has been added. Claims 1-30 are now pending in the application. Reconsideration of the application is respectfully requested for the following reasons.

The disclosure is objected to because in claim 28, line 2, "a plurality patients" should be – a plurality of patients –. Applicants thank the Examiner for the careful reading of the claims. Claim 28 has been amended as suggested.

Claims 1-7, 9, 10 and 12-28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Britton et al., U.S. Patent No. 5,585,642 ("Britton"). Reconsideration is respectfully requested in light of the foregoing amendments and the following reasons.

Claim 1 recites a particle beam therapy system comprising a "first shutter provided in at least one of said beam transport systems and shutting off a beam path in the relevant beam transport system." Claim 1 has been amended to recite that the "first shutter [is] a shutter for physically blocking the beam itself." This is an important feature of the invention.

For example, the specification discloses that "a first shutter is provided to shut off a beam path in that one beam transport system. With the provision of the shutter in the beam path for physically blocking the beam itself, safety can be remarkably improved in comparison with the related art resorting to only reliability of software used in the electromagnet switching controller." Specification, page 3, lines 11-17. The claimed invention is not limited to the disclosed embodiments.

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Britton fails to teach or suggest this limitation. Initially, Applicants note that the Office Action asserts that Britton discloses "a plurality of second beam transport systems each having magnets or electromagnets (see col. 5, lines 66-67) or first shutters 23 and 29 connected in series, communicated between the first beam transport system 14 and the treatment rooms 1-5 . . ." Office Action, page 2. However, elements 23 and 29 of Britton are not "first shutters," but rather are "bending magnets." See, e.g., col. 5, lines 35-51. Moreover, Britton fails to teach or suggest a "shutter for physically blocking the beam itself" as recited in amended claim 1. For at least these reasons, claim 1 is allowable over Britton.

Claim 2 has been amended to recite, inter alia, "a plurality of first shutters provided respectively in said plurality of second beam transport systems . . . , said first shutters each being a shutter for physically blocking the beam itself." Claim 15 has been amended to recite, inter alia, "providing a shutter in a beam path . . . , said shutter being a shutter for physically blocking the beam itself." As discussed above with respect to claim 1, Britton fails to teach or suggest this limitation, and claims 2 and 15 are allowable for at least this reason.

Claims 3-7, 9, 10 and 12-14 depend from claim 2, and claim 16 depends from claim 15. Dependent claims 3-7, 9, 10, 12-14 and 16 should be allowed based at least on the same reason their base claims are allowable, and also because the unique combinations recited in the dependent claims are neither taught nor suggested by Britton.

Claim 17 has been amended to recite a particle beam therapy system comprising a "plurality of shutters provided respectively in said plurality of beam paths for shutting off the respective beam paths." Amended claim 17 also recites a "shutter controller for controlling said shutter to be open, which is provided in the

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beam path associated with the elements selected by said alternatively selecting device, while maintaining the other shutters to be closed, when it is confirmed that the operations of the elements selected by said alternatively selecting device are normal by comparing actual status data of the elements selected by said alternatively selecting device with control command data of said selected elements."

These are important features of the claimed invention. With such features, the claimed invention achieves the advantage in that the beam can be positively prevented from being erroneously introduced to the treatment room in which the irradiation is not scheduled, and thus safety can be improved. More specifically, in a normal condition, electric power is supplied to only one electromagnet group system to establish one beam transport path and the associated shutter is controlled to be open, so that the beam is introduced to only the treatment room in which the irradiation is to be carried out. On the other hand, if electric power is supplied to the plural electromagnet group systems at the same time because of any error, no beam transport paths are formed and all the shutters are maintained to be closed, so that the beam is not introduced to all of the treatment rooms. Thus, it is possible to reliably prevent the beam from being erroneously introduced to the treatment room in which the irradiation is not scheduled, and hence to improve safety.

Support the "plurality of shutters" portion of the amendment to claim 17 can be found, for example, on: page 11, lines 7-21; page 65, lines 9-11; and page 53, line 8 – page 54, line 22 of the specification. Support for the "shutter controller" portion of the amendments to claim 17 can be found, for example, on: page 30, lines 19-26; page 48, lines 2-18; page 49, line 16 – page 50, line 23; and page 53, line 8 – to page 54, line 22 and Figure 13 of the specification.

Britton fails to teach or suggest these limitations, and amended claim 17 is allowable for at least these reasons. Claims 19-21, 23-27 depend from claim 17 and

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incorporate every limitation of claim 17, and should be allowed together with their base claim.

Applicants wish to point out that claim 27 has been amended to clarify that the "shutter controller" controls said shutter to be open, which is provided in the beam path associated with the elements or element group selected by the "alternatively selecting device," while maintaining the other shutters to be closed, when it is confirmed that the operations of the element group selected by the "alternatively selecting device" are normal and further it is confirmed that a treatment room number, which is the same as the treatment room number for the beam path associated with the elements or element group selected by the "alternative selecting device," is received. Support for this amendment can be found, for example, on page 53, line 8 – to page 54, line 22 of the specification.

Claim 18 has been amended to recite limitations similar to those of claim 17, and is also considered to be allowable. Claims 20, 22 and 27 (as amended) depend from claim 18 and should be allowed together with their base claim.

Claim 28 has been amended to recite a particle beam irradiating method comprising "providing shutters in said plurality of beam transport paths, respectively, for shutting off the respective beam transport paths; forming no beam transport paths and maintaining the associated shutters to be closed" when electric power from a power supply is supplied to plural ones of said electromagnet groups; and forming one corresponding beam transport path when electric power from said power supply is supplied to only one of said electromagnet groups." Amended claim 28 further recites "controlling the associated shutter to be open and irradiating the charged particle beam to the patient by the irradiation unit in the corresponding treatment room through the

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formed beam transport path." Britton fails to teach or suggest these limitations, and amended claim 28 is considered to be allowable.

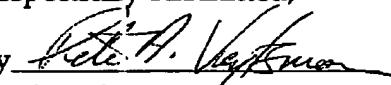
New claims 29 and 30 have been added and are believed to be allowable based at least on their dependence upon independent claims 17, 18 and 28. Moreover, new claims 29 and 30 clarify that the shutter is a shutter for physically blocking the beam itself. It is clear that the Britton reference fails to teach or suggest the features relating to the combination of the "shutters -provided respectively in said plurality of beam paths for shutting off the respective beam paths" and the "shutter controller" in addition to the alternatively selecting device.

Applicants acknowledge with appreciation the indication that claims 8 and 11 would be allowable if rewritten in independent form. Claim 8 has been amended to incorporate the limitations of base claim 2 and intervening claim 3. Claim 11 has been amended to incorporate the limitations of base claim 2 and intervening claim 10. Claims 8 and 11 are considered to be in condition for allowance.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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